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A radio talk by W. R. Beattie, Bureau of Plant Industry, delivered through WRC and 46 associate NBC stations, broadcast in the Department of Agriculture period of the National Farm and Home Hour, Tuesday, January 12, 1932.

How-do-you-do Farm and Home Folks! Plant Growing Structures is the topic of our garden calendar today. I need not spend time presenting arguments in favor of getting certain of our garden crops started early if we want to get our products on the market before the decline in prices. You folks who live in the Gulf Coast region do not have this problem as do the gardeners who are located in the central and northern sections, but plant beds and sash houses are often a decided advantage even in southern climates. The northern gardener can often gain two to four weeks in earliness if he has a small greenhouse or heated beds in which to start tomatoes, peppers, eggplant, celery, lettuce, cabbage, cauliflower, cucumbers, squashes and melons.

In Pennsylvania, Connecticut, New Jersey, and other Northeastern States the market gardeners have built a great many small sash-covered plant houses during the past four or five years. Standard 3 by 6-foot hotbed sash are as a rule used to cover these small houses, the dimensions of the house being made to conform to the sash. For example a 10-sash house would be about 16 feet long and 10 feet wide with five sash covering each side. The sash cost about \$1.50 each unglazed or from \$3.50 to \$4.00 each painted with two coats of white lead paint and glazed with double strength glass. The walls of the house are sometimes constructed of concrete blocks but more often of boards nailed to posts set in the ground. In cold locations the walls are doubled with building paper between the layers of boards then earth is banked around the outside to protect the house from cold. The framework of the house is made of 2x4's with a ridge through the center and side rafters on which the sash rest.

Stages or benches are constructed inside the house on which to grow the plants and a narrow walk is left through the center. A door is provided in one end and a stove in one corner with a stovepipe running the full length of the house furnishes the small amount of heat required.

In certain of the Northeastern States the Extension Horticulturists have supervised the construction of one of these small plant houses in a community then the County Agricultural Agent has used that house as a demonstration for others. In this way hundreds of these houses have been built. In some cases these houses are built at a cost not exceeding \$75.00 including the stove. As a rule the house is not heated until about the time for sowing seeds for early plants and if the house is tightly constructed and well banked on the outside very little heat will be required. I find that by having the plant house sunk well into the ground that it is very easy to heat. For example I have a concrete swimming pool on my place that I cover with a framework and hotbed sash and if you were to visit me along about the end of March you would probably find me with fifteen or twenty thousand plants of various kinds in this improvised greenhouse. The framework is made in sections and before warm weather the whole cover and the tables on which the plants are grown are removed, stored in a shed, and about 12,000 gallons of water in the pool.

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These small sash-covered plant houses are especially adapted to the use of gardeners who desire to start twelve or fifteen thousand early plants. The capacity of the house is also greatly increased by having plenty of coldframe space to which the plants may be shifted for tempering to outdoor conditions. Many of the truck growers have regular greenhouses in which to start early plants but the sash house will serve for anybody who does not want to incur the expense of a regular greenhouse.

In New Jersey, Maryland and Delaware the truck growers often use pipe heated beds for growing plants. In some cases the beds are heated by means of brick or tile flues running under the floors of the beds. Very often these beds are covered with sash but heavy muslin or light canvas is the usual covering. I regret that we do not have a bulletin telling how to construct the small sash houses but our Farmer's Bulletin No. 1-3-3-8, Tomatoes as a Truck Crop describes the heated beds used by the growers of early tomatoes. If any of you have an idea of building one of the small plant houses and will write me I will see that you get the necessary information on how to build it and the materials required.

Manure hotbeds are pretty nearly a thing of the past on account of the scarcity of manure and the labor involved in constructing them. The small plant house, on the other hand when once built will last for years, it takes only perhaps a half ton of coal to heat it during the plant growing season and it does not require nearly as much attention as a hotbed. Of course the house must be ventilated on bright days and great care must be exercised in watering the plants or you may start a case of "Damping off" disease that will soon ruin your plants in the seedbeds. Sterilizing the soil with hot water, steam or by baking in the oven will help but the control of "Damping off" depends mainly on careful watering and proper ventilation. Another method of sterilizing the soil is to treat it with a solution consisting of 1 pint of Formaldehyde in 30 gallons of water. Soak the soil with this solution about two weeks before planting. Farmers' Bulletin No. 1-3-7-1 on Diseases and Insects of Garden Vegetables tells how the work should be done.

Electric heated hotbeds are becoming quite popular in sections where electric current can be secured at moderate rates. The beds are constructed with floors beneath which the electric heating elements are installed. The beds are covered with ordinary hotbed sash and the heat is regulated by a thermostat similar to that used for brooders and incubators. It undoubtedly pays to get plants started early both for our home gardens and market gardens and the gardener who is without some means of starting his plants early is at a decided disadvantage. Not only should the plants be early but they should be well grown and stocky.